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Statistics of population. — Dr. H. Paasche writes regarding the population of the cities of western Europe during the middle ages, that, even as late as the seventeenth century, no regular estimates of population were made. Nobody cared for statistics of this sort: consequently there is a gap in our knowledge

of economic and social life of those times, which can only be filled up by reasoning from incidental items in town and city records. The writer takes up the history of Rostock in the fifteenth and sixteenth centuries, and shows how this may be done. — (*Jahrb. nat.-ökon. statist.*, Nov. 15, 1882.) D. W. R. [411]

INTELLIGENCE FROM AMERICAN SCIENTIFIC STATIONS.

GOVERNMENT ORGANIZATIONS.

Coast and geodetic survey.

Recent deep-sea soundings of unusual depth. — In the prosecution of recent deep-sea soundings off the West-Indian islands by the U. S. steamer 'Blake' (Lieut.-Comdr. W. H. Brownson, U.S.N., commanding), for the purpose of ascertaining the extent of the continental plateau and the border of the oceanic basin, some extraordinary depths have been reached, and successfully measured by the method of wire-sounding; the specimen-cup and thermometers having been brought up from depths exceeding five miles.

The following extracts from the report of Lieut.-Comdr. Brownson, addressed to Prof. J. E. Hilgard, superintendent of the survey, will be of general public interest. It is written from St. Thomas, under date of Jan. 29, 1883.

"I enclose, herewith, approximate positions of soundings taken on lines, first, from Mariguana to Ocean plateau, thence down through Turks island passage to coast of Hayti, — second line from Samana promontory to Navidad bank, — and thence out to Ocean plateau. . . . From an inspection of the chart to the northward of this island, in connection with the result obtained by me on last line, and the soundings taken by Sir George Nares in the 'Challenger,' I thought it more than probable that the deep water found by him (3,875 fathoms) would extend to the westward. . . .

"On the 27th inst., in lat. 19° 40' 50", long. 66° 23' 40", seventy-one miles west of 'Challenger's' greatest depth, with long rolling sea, fresh trade-winds, with frequent squalls of wind and rain, sounded in 4,561 fathoms. In reeling in, cross-heads of sounding-machine showed great strain on wire: so shipped cranks to assist reeling-engine over the centre to prevent sudden strain on wire; and, by using every care to ease the strain, we succeeded in recovering the sounding-rod and thermometer. The bottom was brown ooze; temperature 36½° F.

"Fifteen and a half miles south-east of the latter station sounded again in 4,223 fathoms, bottom of two layers of ooze, brown on top, with under-strata of gray; temperature 36°. When the wire was nearly in, the reel showed signs of being crushed, cracking in several places; but fortunately it did not give way. With the last sounding, two bottom-thermometers were sent down, — a Miller Casella No. 49,406, and a Tagliabue No. 531. The latter came up crushed by the excessive pressure. The reading of the Miller Casella I have no reason to doubt.

"I doubt if the sounding machine and wire has ever before successfully withstood so great a strain.

"In the soundings taken by Capt. Belknap in the Pacific, in no case that I can find were the sounding-rod and bottom-thermometer recovered in over 4,356 fathoms.

"In the second sounding, the wind had freshened considerably, and there was a short ugly sea in addition to the long swell."

Geological survey.

The Grand Cañon Group. — Marble Cañon and the Grand Cañon constitute together a continuous gorge, through which the Colorado river courses for 250 miles. The walls of the gorge are not sheer precipices, but are terraced on a grand scale; the succession of platforms and cliffs being determined by the succession of strata, which, for the most part, lie horizontal. The top of the wall is everywhere upper carboniferous; and thence downward for about 4,000 feet there is a nearly uniform system of paleozoic rocks, conformable in dip. The principal member of this conformable series is so massive that the cliff formed by it is unscalable at nearly all points; so that almost the only access to the depths of the gorge has been by boats. In Major Powell's first exploration of the Colorado, he discovered at the head of the Grand Cañon, where the gorge is deepest, a system of inclined rocks which had been greatly eroded before the deposition of the conformable series. These unconformable rocks, which he named the *Grand Cañon Group*, rest in turn upon schistose and granitoid rocks having the general facies of the archæan. The difficulties of the voyage, and especially the exhaustion of supplies, rendered it impossible for him to make extended search for fossils; and, in lack of paleontologic evidence, he assigned the Grand Cañon Group provisionally to the Silurian, and referred the whole of the conforming series above it to the carboniferous. Mr. Gilbert, examining soon after the section at the lower end of the gorge, discovered no unconformity, except that between the metamorphic and non-metamorphic rocks; and, finding Cruziana in the lowest member of the unaltered rocks, he referred it provisionally to the lower Silurian. He named this member the *Tonto Group*. Still later Mr. C. D. Walcott, making a careful study of the section at an intermediate point, discovered an unconformity by erosion above the Tonto, and at the same time obtained additional fossils which served definitely to place the Tonto in the Cambrian. The question then arose, whether the unconformity by erosion, observed by Walcott, was the equivalent of the unconformity by dip observed by Powell. If it was, then in Powell's section the Tonto lay immediately above the archæan, and the Grand Cañon Group was Cambrian. If it was not, then the Tonto was to be found at the base of Powell's conforming series, and the Grand Cañon Group was Pre-Cambrian. For the sake of settling this question, and at the same time of exploring the Pre-Cambrian rocks, if such they should prove to be, Major Powell, last autumn, made an excursion to the locality, with great difficulty constructing a horse-trail from the upper plateau to the brink of the river, where the rocks are best exposed. He found the Tonto at the base of the upper series, and thus demonstrated the Pre-Cambrian age of the Grand Cañon Group. The rocks being unmetamorphosed, and the series having a thickness of more than ten thousand feet, there is great reason to hope that they will prove fossiliferous, and thus add a prefatory chapter to the

geological record. Mr. Walcott, who accompanied Major Powell, remained on the ground to search for fossils, and has not yet completed his examination. If he discovers them, his report will be eagerly received alike by geologists and biologists.

NOTES AND NEWS.

— Professor Felipe Poey of Havana, under date of the 24th of January, 1883, announces that the Spanish government has purchased his *Ichthyologia cubana* for \$4,000. It will be exhibited in the exposition in Amsterdam. He hopes to have it printed in Madrid. The work is in ten volumes, each $4\frac{1}{2}$ by $3\frac{1}{4}$ decimetres. They contain 1,040 plates of fishes of every period of growth. The drawings were made by himself from the life. Many of the plates occupy three, and even six, double pages. About half fill only one single page each.

The plates represent 758 species of Cuban fishes (1,300 individuals), 90 scales, 94 vertical sections, 87 entire skeletons, 51 half-skeletons, 43 details of skeletons, 85 complete viscera, 32 details of viscera, 8 entozoa, 120 miscellanea.

— The addresses at the memorial meeting last October in honor of the late Prof. W. B. Rogers, the founder of the Massachusetts institute of technology, have been appropriately published by the Society of arts of the institute in a separate pamphlet. An excellent portrait, apparently from a photograph taken about five years ago, reproduced in heliotypy, accompanies the pamphlet. The addresses were of unusual interest, and well illustrate the breadth and catholicity of Professor Rogers's life. Perhaps the most interesting to the Boston audience were the remarks, toward the close of the meeting, by Major Hotchkiss of Virginia, who spoke of his earlier life in the South. We quote the following passage:—

"All over the state of Virginia, even now, you will continually meet people in the country—old men and old women—who recollect the days when Professor Rogers drove up with his gig, with Levi, his negro servant, behind him on horseback, accompanying him in his geological rambles—recollect with pleasure that familiar lecture in the morning from the doorstep; for he never went away without leaving with each one that he visited a new vision of that which before they had seen with sealed eyes, that it was his delight to unseal. One of the best of our living structural geologists, one of that same Scotch-Irish race, when a flaxen-haired boy, heard Professor Rogers describe to a group of listeners one of the grand arches of one of Virginia's mountain ranges, when, stooping down, like another great teacher, he wrote its structure in the sand, but wrote for all time. . . .

"It would furnish material for a singular study,—that primal geological circle. Levi, the negro serving-man, was in it. He became a geologist. He learned to think as his master thought. And when the great French geologist, Daubeny, came to visit Professor Rogers. . . . Levi drove him; and, as they rode through the grand sections of Appalachian structure there displayed, Levi gave him lessons in American geology. 'Dis, sar,' said he, 'we call number one. Mighty fine *crap* (out-crop) ob it 'long here.' He had so well learned the lesson from the great master of American geology, he could teach it to the one of French."

— The international geological congress at Bologna in 1881 appointed a commission to prepare a map of Europe, and the following particulars have now been agreed upon: the topographic basis will be prepared by Kiepert, and published by Reimer & Co. at Berlin, but with French wording. It will consist of 49 sheets on a scale of 1:1,500,000, the whole measuring 3.72 by 3.36 metres. Mountain shading will be omitted. 900 copies have been engaged by various governments, and thus the price has been brought down to the reasonable figure of 100 francs. Although some six years will be needed for its completion, those who wish copies are requested to subscribe at once.

— The Archaeological institute of America now numbers about 80 life, and 220 annual members, and, besides its Reports and its Papers (of two series), has commenced the publication of a Bulletin, the first number of which gives a statement by the executive committee of the work of the institute in 1882, as far as regards the undertakings at Assos; a report by Mr. Bandelier on his investigations in New Mexico in the same year; and a note by Mr. Ludlow on a terra-cotta figurine of a centaur from Cyprus, interesting as having human fore-legs like those found in the sculpturings of the epistyle of the temple at Assos by the expedition of the institute. Mr. Diller, we learn from the committee's report, spent the greater part of his vacation last year in continuing his studies of the geology of the Troad.

The paper by Mr. Bandelier is the longest, the most important, and of the largest interest to scientific readers. He reaches the conclusion that the present condition of the Pueblo Indians is not their original one, but has been largely affected by contact with the whites, and that there were only two types of aboriginal architecture in New Mexico,— "the many-storied communal house, and the one-story building of stone." He contrasts, also, the 'cacique' of to-day and that of the old Spanish authors.

Interest in the work of the institute will be increased by the timelier publication of results which the establishment of the Bulletin will permit.

— The Cincinnati society of natural history celebrated the birthday of Charles Darwin on Feb. 23. Prof. A. G. Wetherby delivered an address on the Influence of Darwinism upon science, which was followed by an exhibition of microscopes. The reception had to be postponed from the 12th, owing to the flood in the Ohio, and the consequent stoppage of the gas-works.

— In the article The glacial theory before the Philadelphia academy (SCIENCE, p. 97), the statement occurs that "the greatest snow-clad elevation in Greenland is Washington Land." The author wishes this changed to "the greatest snow-clad elevation in the region of greatest cold (the west) in Greenland," etc.